REMARKS

Prior to this communication, claims 1-41 were pending in the application. By this Amendment submitted along with a Request for Continued Examination, Applicants have amended claims 1, 3-5, 8, 9, 12, 14-16, 18, 23, 24, 27-29, 31, 36, and 37; cancelled claims 2, 13, 17, and 30 without prejudice or disclaimer; and added claims 42-44. No new matter has been added. Of the claims now pending (claims 1, 3-12, 14-16, 18-29, and 31-44), claims 1, 16, 29, and 42 are independent. Reconsideration and allowance are respectfully requested.

Applicants incorporate by reference herein their earlier remarks relating to the claimed feature of using a transducer signature to identify a transducer type.

I. Embodiments of Applicants' Invention

Embodiments of the invention relate to a sensor or transducer that not only identifies itself, but also automatically configures analog signal conditioning electronics. For example, as described in Applicants' specification, such electronics are automatically reconfigured when one type of transducer is replaced by a different type of transducer:

> If a new pH sensor is attached, the transducer body 108 will detect that a sensor head has been attached. The transducer body 108 will also detect a plurality of transducer calibration variables, and update a plurality of engineering unit conversion factors needed to provide accurate pH and temperature readings. However, **if a different type of transducer is attached, the transducer body 108 will reconfigure the analog signal conditioning electronics, e.g. 148, 152, and 156** to convert the attached sensor type into calibrated engineering unit.

(Page 6, lines 5-12.) Thus, embodiments of the invention effect automatic configuration of analog signal conditioning circuitry, such that the configured circuitry functions properly with different types of transducers.

II. Claim Rejections – 35 U.S.C. § 103

A. Independent Claims 1 and 16

Claims 1 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,475,384 ("Manenti") in view of IEEE Standard No. 1451.2-1997 ("the IEEE Std").

Amended claim 1 requires, among other things:

> a memory element coupled to the transducer and configured to store a plurality of transducer signatures, **each transducer signature comprising ... calibration parameters**; and
>
> **a processor** coupled to the memory and **configured** to store an adaptive algorithm, ... **to configure at least one analog signal conditioning component using the calibration parameters, to process the environmental characteristic using the configured analog signal conditioning component and the adaptive algorithm, and to output the processed environmental characteristic.**

At least the above limitations of claim 1 in boldface print are not taught or suggested by the cited references.

For instance, Manenti discloses remote addressing of a collection of transducers, and is devoid of any teaching or suggestion with respect to (a) configuration of any analog signal conditioning component based on stored calibration parameters of a transducer, or (b) processing of a transducer output using the configured analog signal conditioning component.

The IEEE Std does not cure the deficiencies of Manenti. The IEEE Std generally describes a digital interface for connecting transducers to microprocessors and a transducer electronic data sheet ("TEDS") format. The IEEE Std states as follows:

> This standard defines a digital interface for connecting transducers to microprocessors. It describes a TEDS and its data formats. It defines an electrical interface, read and write logic functions to access the TEDS, and a wide variety of transducers. **This standard does not specify signal conditioning, signal conversion, or how the TEDS data is used in applications.**

(IEEE Std, page 2, 1.1 Scope; emphasis added.) Thus, like Manenti, the IEEE Std is devoid of any teaching or suggestion with respect to (a) configuration of any analog signal conditioning component based on stored calibration parameters of a transducer, or (b) processing of a transducer output using the configured analog signal conditioning component.

For at least the above reasons, independent claim 1 is allowable. Independent claim 16 is materially similar to claim 1 with respect to the above-identified limitations of claim 1. Therefore, for at least the above reasons, claim 16 is allowable.

B. Dependent Claims 2-15 and 17-28

Claims 2-15 and 17-28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Manenti in view of the IEEE Std. Claims 2, 13, and 17 have been cancelled, rendering the rejection moot with respect to those claims. Claims 3-12, 14, and 15 depend from claim 1, and claims 18-28 depend from claim 16, and are therefore allowable for the reasons set forth above with respect to claims 1 and 16. Claims 3-12, 14, 15, and 18-28 specify additional patentable subject matter not specifically discussed herein.

C. Independent Claim 29

Claim 29 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Manenti in view of the IEEE Std and in further view of U.S. Patent Application Pub. No. 2003/0187606 ("Curry").

Independent claim 29 requires, among other things:

> **retrieving ... calibration parameters from the memory;**
>
> **configuring at least one analog signal conditioning component using the calibration parameters;**
>
> ...
>
> **conditioning the signal indicative of the environmental characteristic using the processor with the configured analog signal conditioning component and an adaptive algorithm[.]**

As discussed above in connection with claim 1, neither Manenti nor the IEEE Std teaches or suggests configuration of any analog signal conditioning component based on stored calibration parameters of a transducer, or processing of a transducer output using the configured analog signal conditioning component.

Curry does not cure the deficiencies of Manenti and the IEEE Std. Curry teaches a heat production (BTU) meter 18 including a printed circuit board 11 that contains "all the necessary electronic circuitry for control, measurement, data processing, firmware, data storage, and communications to external devices." (Curry, paragraph [0036].) Curry is devoid of any teaching or suggestion with respect to (a) configuration of any analog signal conditioning component based on stored calibration parameters of a transducer, or (b) processing of a transducer output using the configured analog signal conditioning component.

For at least the above reasons, claim 29 is allowable.

D. Dependent Claims 30-41

Claims 30-41 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Manenti in view of the IEEE Std and further in view of Curry. Claim 30 has been cancelled, rendering the rejection moot with respect to this claim. Claims 31-41 depend from claim 29, and are therefore allowable for the reasons set forth above with respect to claim 29. Claims 31-41 specify additional patentable subject matter not specifically discussed herein.

E. New Claims 42-44

New independent claim 42 recites:

> A sensor adapter operably configured to receive a transducer, the transducer configured to sense data indicative of an environmental characteristic and having a memory configured to store a transducer identifier and calibration parameters, the sensor adapter comprising:
>
> **a processor configured to receive, from the transducer,** the data indicative of the environmental characteristic, the transducer identifier, and the **calibration parameters,** to identify the type of the transducer using the transducer identifier, **to configure an analog signal conditioning circuit based on the calibration parameters, and to adaptively process the received data**

from the transducer using the configured analog signal conditioning circuit and an adaptive algorithm; and

an output interface configured to receive the processed data from the processor and to report the processed data.

The above limitations of claim 42 in boldface print are materially similar to those discussed above in connection with claims 1, 16, and 29. For at least the above reasons, claim 42 is allowable. Claims 43 and 44 depend from claim 42, and are therefore allowable for the reasons set forth above with respect to claim 42. Claims 43 and 44 specify additional patentable subject matter not specifically discussed herein.

III. Conclusion

In light of the above amendments and remarks, Applicants respectfully request reconsideration and allowance of claims 1, 3-12, 14-16, 18-29, and 31-44. Should there be any questions or concerns regarding this application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,

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